ISRO To Launch First Test Vehicle Mission For Gaganyaan

Why In News

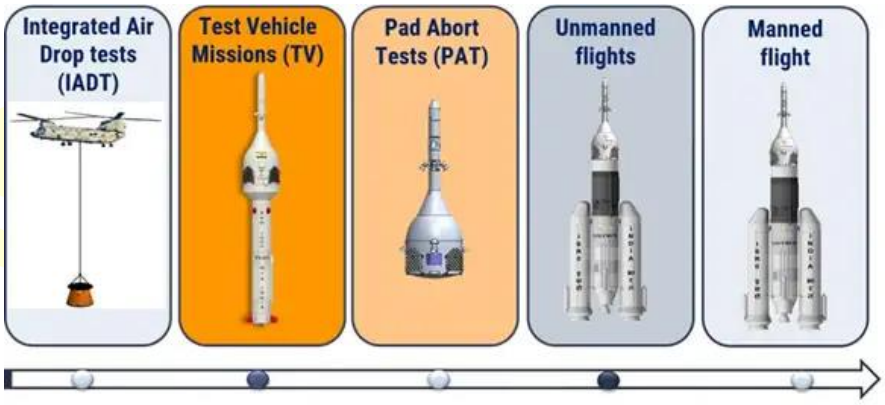
- The **First Test Vehicle Mission** Of India's Ambitious Maiden Human Spaceflight Venture Gaganyaan To Validate The Crew Escape System Will Be Launched In A Month Or Two.
- According To Officials Of The Bengaluru-Headquartered National Space Agency, It Would Be The First Of The Four Abort Missions Of The Gaganyaan Programme.

Gaganyaan Mission

- The Gaganyaan Program Seeks To Demonstrate India's Capability To Send A Crew Of **Two To Three Members** Into A Circular Orbit Approximately 400 Kilometres Above Earth's Surface For A Mission Lasting One To Three Days.
- The Mission Will Then Safely Return To Earth, Landing In A Designated Location Within Indian Sea Waters.

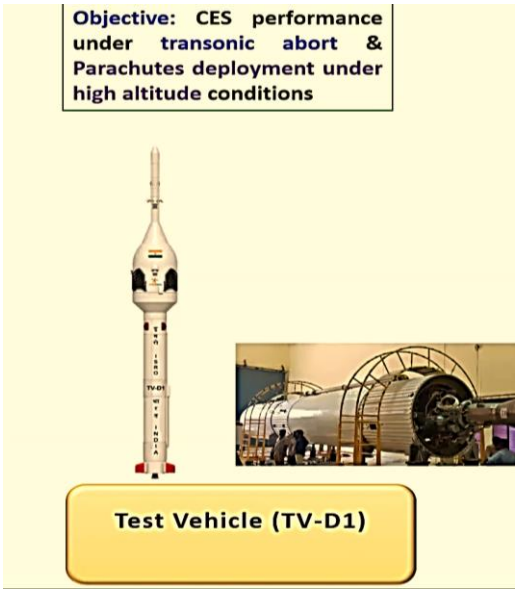
Program Roadmap Of Missions

- According To Officials From The Indian Space Research Organisation (ISRO), This Mission, Known As **TV-D1, Will Be The First Of Four Abort Missions** Within The Gaganyaan Program.
- TV-D1 Will Be Followed By The Second Test Vehicle Mission, **TV-D2 & The First Uncrewed Mission Of Gaganyaan**, Named LVM3-G1.
- The Subsequent Series Of Test Vehicle Missions (TV-D3 And D4) And The LVM3-G2 Mission, Featuring **A Robotic Payload**, Are Also Part Of The Program's Roadmap.
- The Schedule For The Crewed Mission Will Depend On The Outcomes Of These Test Vehicles And Uncrewed Missions.



Objective

- The Primary Objective Of The Upcoming TV-D1 Mission Is **To Validate The Crew Escape System, A Crucial Safety Component**.



- The Crew Escape System Is An Emergency Escape Measure Designed To Quickly **Pull The Crew Module Along With The Astronauts** To A Safe Distance From The Launch Vehicle In The Event Of A Launch Abort.
- The First Test (Pad Abort Test) Demonstrated The Safe Recovery Of The Crew Module In Case Of Any Exigency At The Launch Pad.

Launch Vehicle For The Gaganyaan Mission

- The **LVM3 Rocket**, The **Heavy-Lift Launcher Of ISRO**, Is Identified As The Launch Vehicle For The Gaganyaan Mission.
- It Consists Of A Solid Stage, A Liquid Stage, And A Cryogenic Stage.
- **LVM3 Has Been Human-Rated**. When We Say Human-Rated, It Should Have Adequate Safety Margins.
- HLVM3 **Consists Of A Crew Escape System** (CES) Powered By A Set Of Quick-Acting, High-Burn-Rate Solid Motors That Ensure That The Crew Module (CM) And Crew Are Taken To A Safe Distance In Case Of Any Emergency Either At The Launch Pad Or During The Ascent Phase.